



# Evolutionary C2 Testing

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Commander

Detachment 1, 46th Test  
Squadron



# GOOD NEWS: You Don't Have to Test!!

- You don't need to test when:\*
  - The responsibility for failure can be shifted to someone else
  - The significance of any problem is insignificant
  - The software does not have to work
  - No one is, or will be, using the system
  - The project has already failed



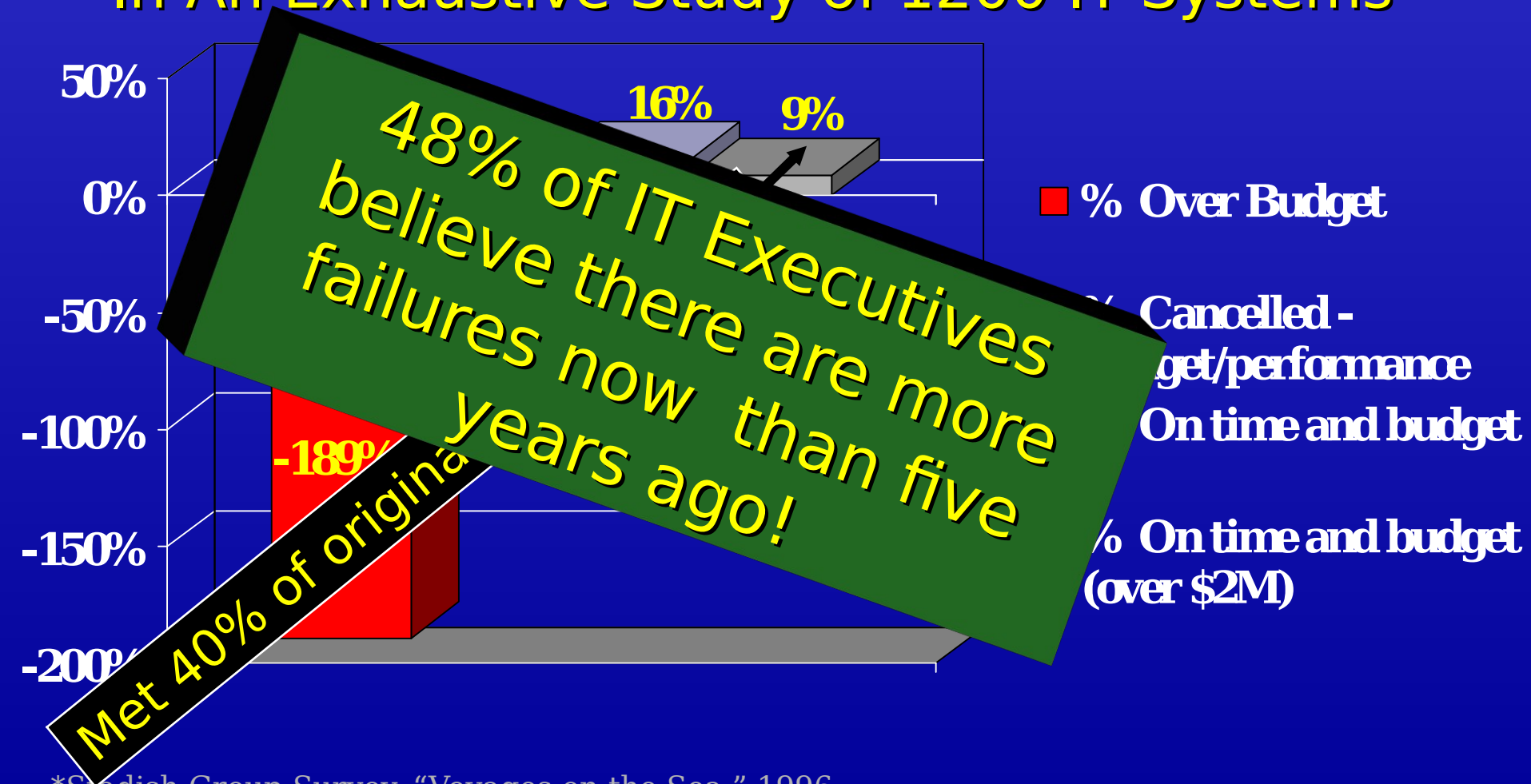
# MISTAKES

IT COULD BE THAT THE PURPOSE OF  
YOUR LIFE IS ONLY TO SERVE AS A



# Did you know....?

In An Exhaustive Study of 1200 IT Systems\*

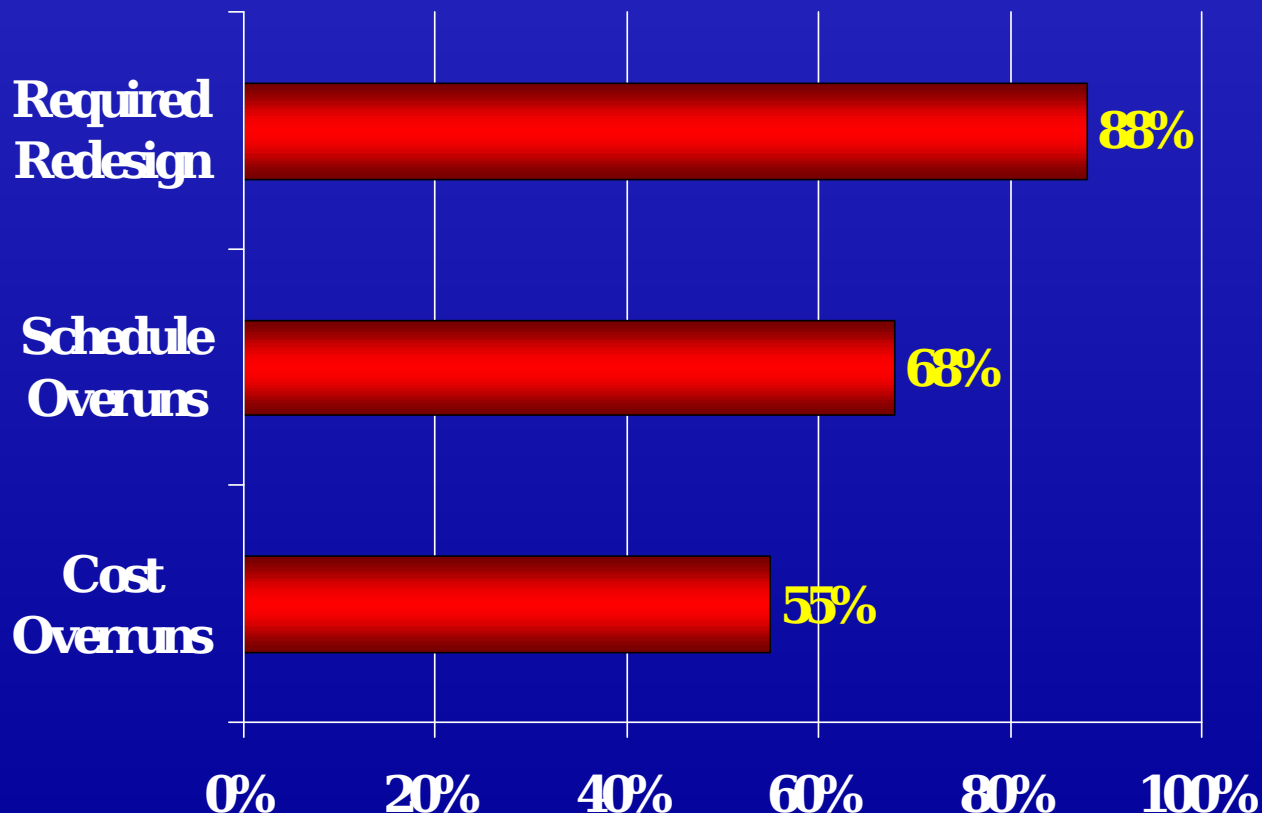


\*Stadish Group Survey, "Voyages on the Sea," 1996.



# Did you know....?

An IBM study for large, distributed IT systems\*



\*Scientific American, October 1994



# Did you know...?



Cost to Rework  
When

Discovered\*  
After delivery

120

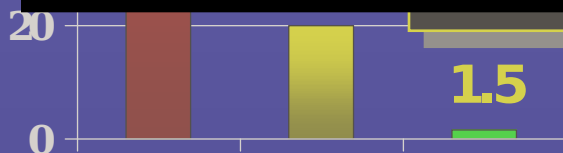
The Average  
User Interface  
will have 40  
defects\*\*

40

36

“Repeated testing is the most potent technique for achieving a good design of all”

- Dr Tom Landeur, cognitive scientist and author, Bell Labs



Two  
Usability  
Tests

Six Usability  
Tests

\*Crosstalk Magazine, Nov 1992

\*\*"Four Innovations That (Might) Improve Work," Scientific America, Jul 97.



# More Challenges



- Difficulties preparing for, and efficiently passing, OT&E
- Certification and compliance hurdles
- Spiral development squeezing timelines
- Changes in test - CTF, MLE, ?
- Mandatory use of a Responsible Test Organization





# Part of the Solution



- ESC, AFDTC, AFOTEC, 53rd Wing Commanders agreed upon test detachment at Hanscom
- Det Mission:.

*To ensure dynamic C2 capability  
to the warfighter  
through rapid evolutionary  
testing*





# What We Do

- Planning and organizing
- Coordinating resources
- Provisioning
- Executing
- Reporting

*We are a  
Responsible  
Test  
Organization*

**C2 Developmental Testing**



# What We Do

## This isn't your father's DT&E

- Contractor conducts in-house DT&E
- RTO orchestrates the Combined Test Force participation

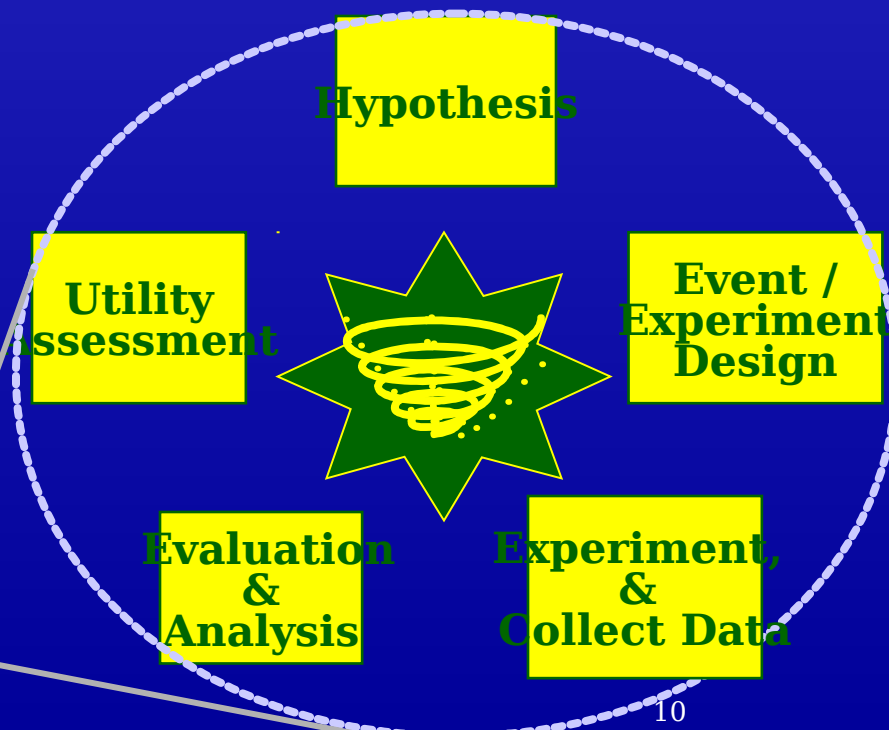
Performance  
Objectives

Design

Code/  
Fabricate/  
Integration

Experiment/  
Utility Eval  
Tradeoff

Deliver





# The Bad News

We're Fee For Service





# So Why Choose the 46TS?



People

Process

Products



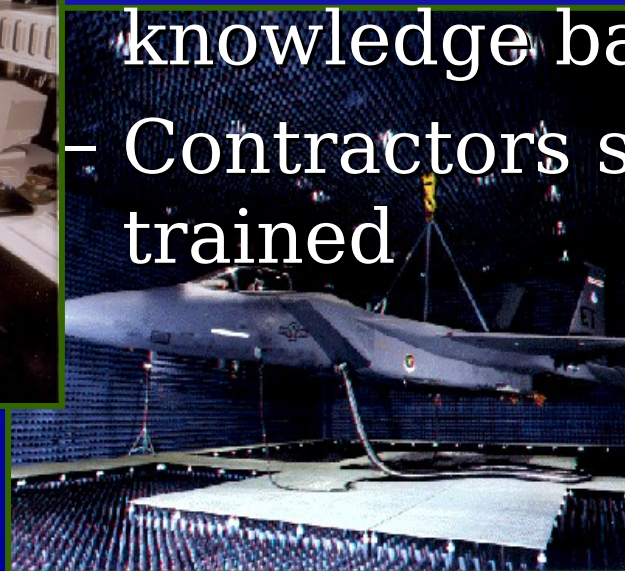




# So Why Choose the 46TS?



- **People** - The AF's C2 Testers
  - Test expertise - It's all we do!
  - Broad resources and a vast knowledge base
  - Contractors screened and trained

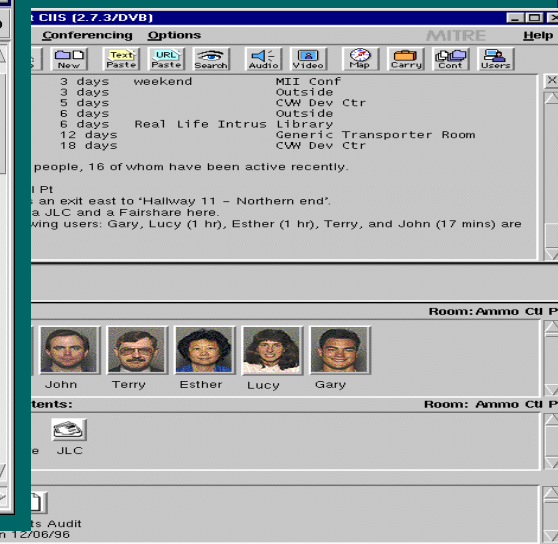
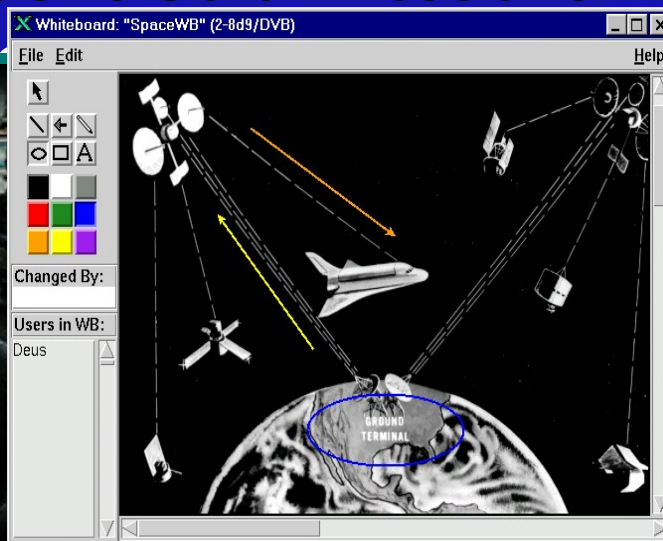




# People - Collaborative Tool Eval



- “AC2A and ESC have begun a rapid spiral development process designed to meet
- immediate needs for a distributed collaborative environment
- environment...[for] the warfighter”
- - Maj Gen Hawley, AC2ISRC/CC
- Quicklook report submitted on 23 Dec



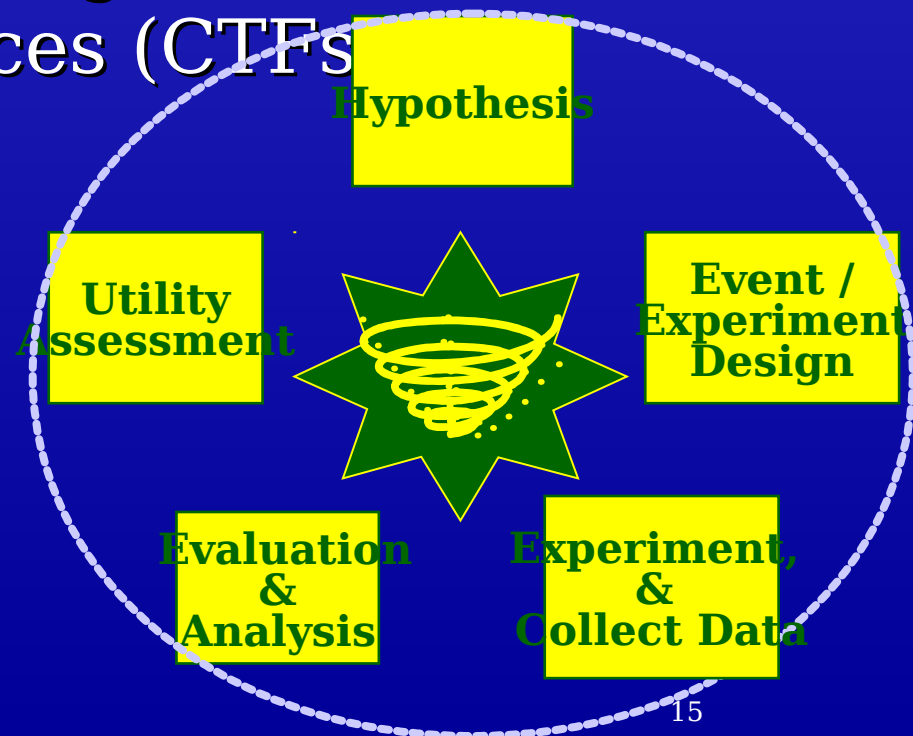
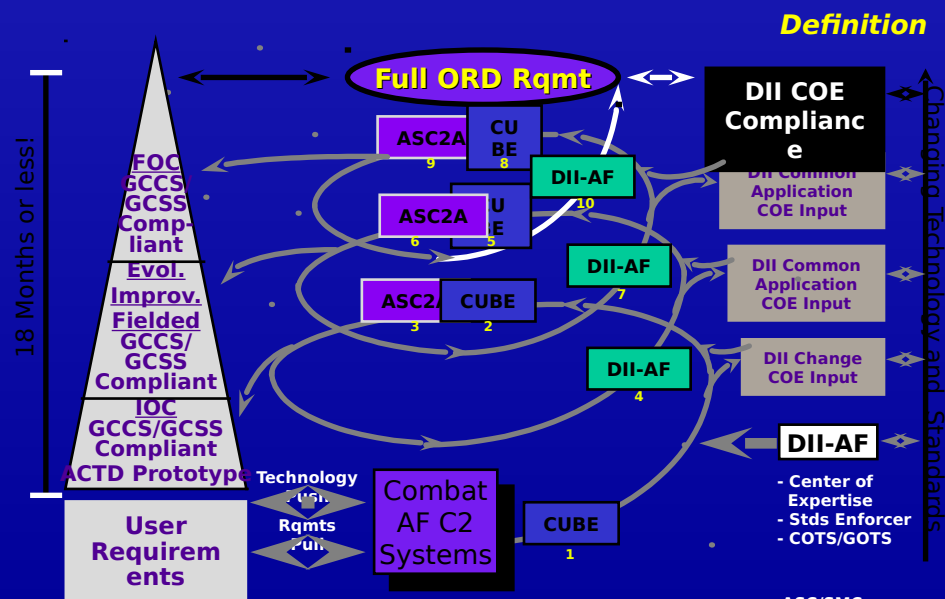


# So Why Choose the 46TS?



## • Process

- We know the acquisition process and T&I
- We know how to capture and assess data
- We know how to organize and run Combined Test Forces (CTFs)

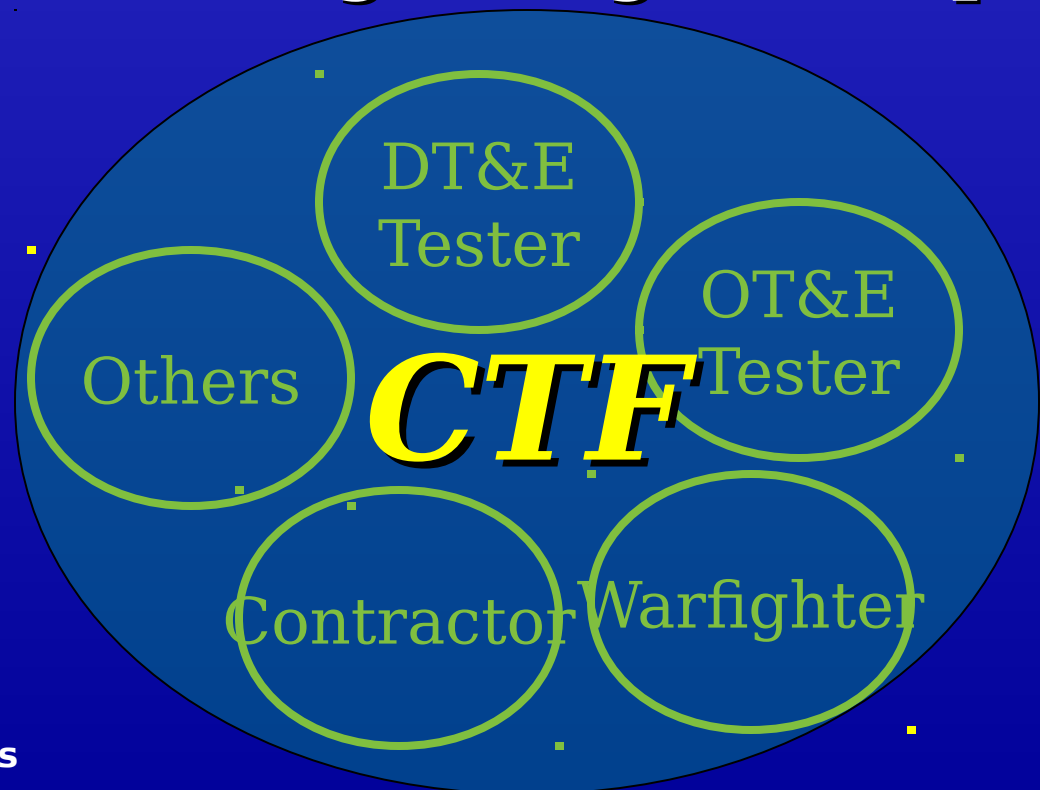
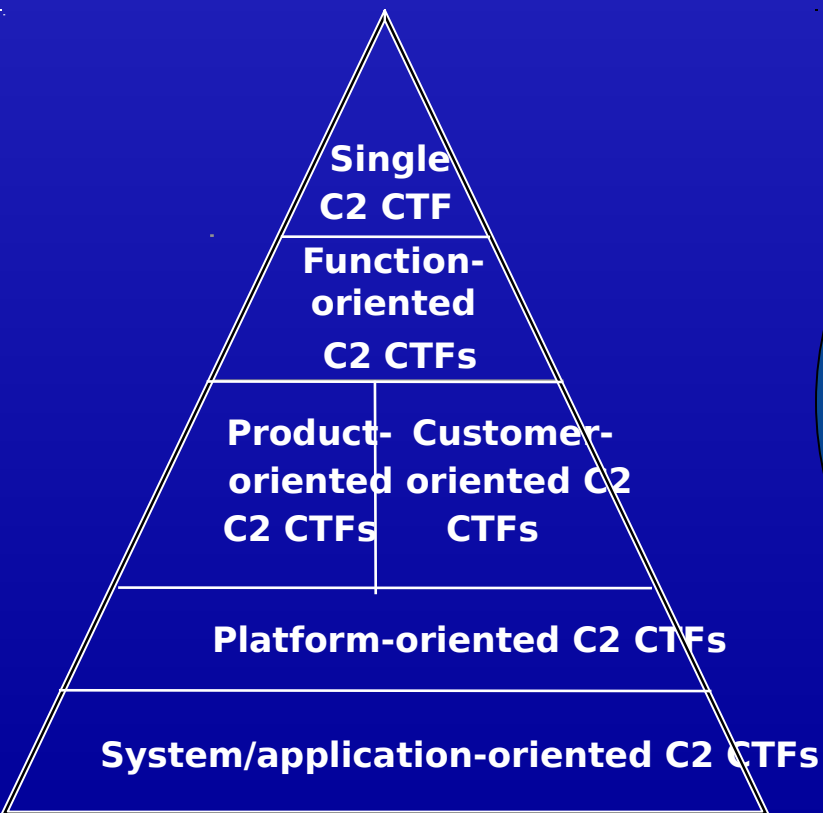




# So What is a CTF?



- Key players in evaluating and fielding the program
- Led by the RTO
- Involved from the beginning of the program

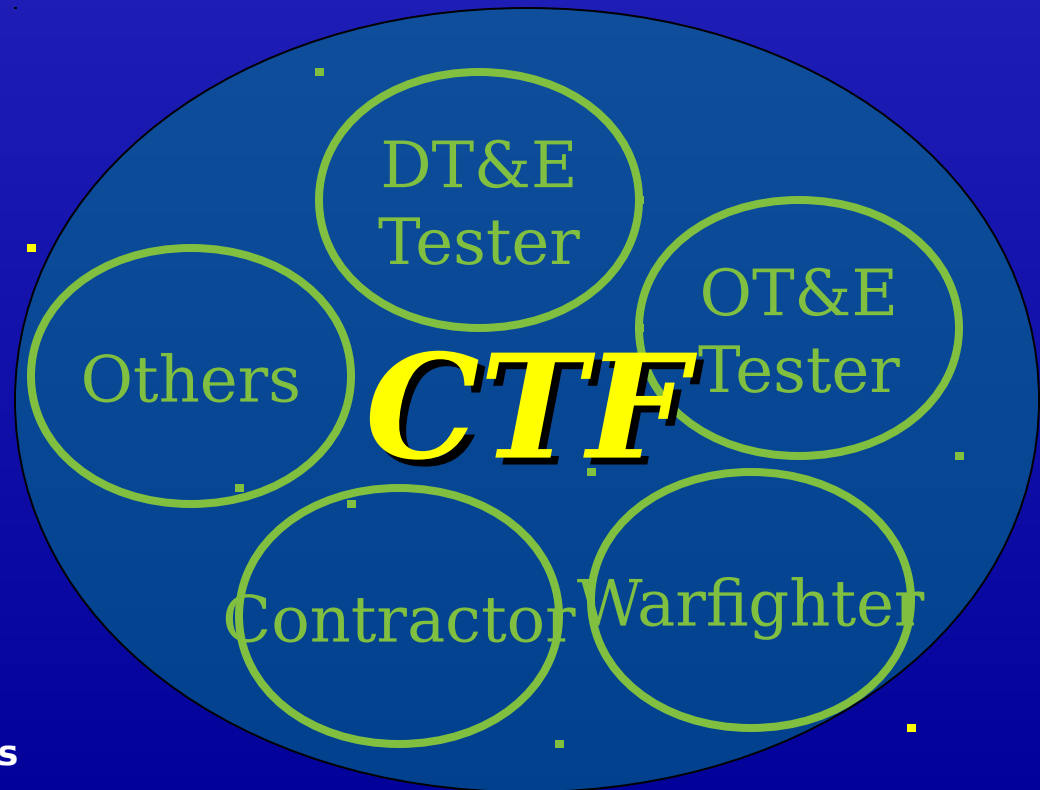
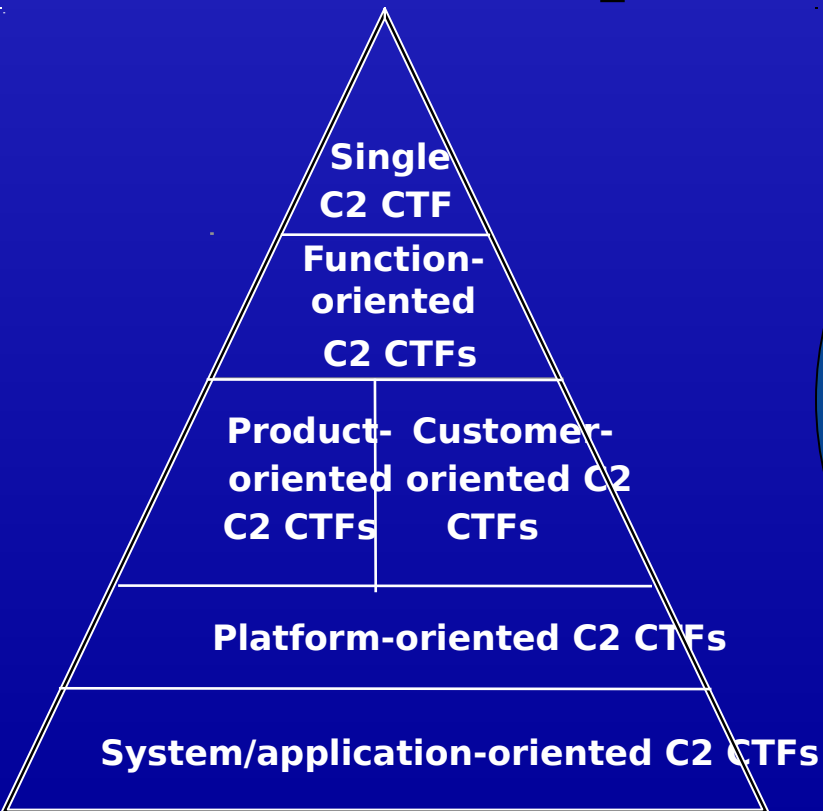






# CTF Strengths

- Clear testing objectives, processes, and
- Maximize resources
- Constant evaluation feedback
- No surprises

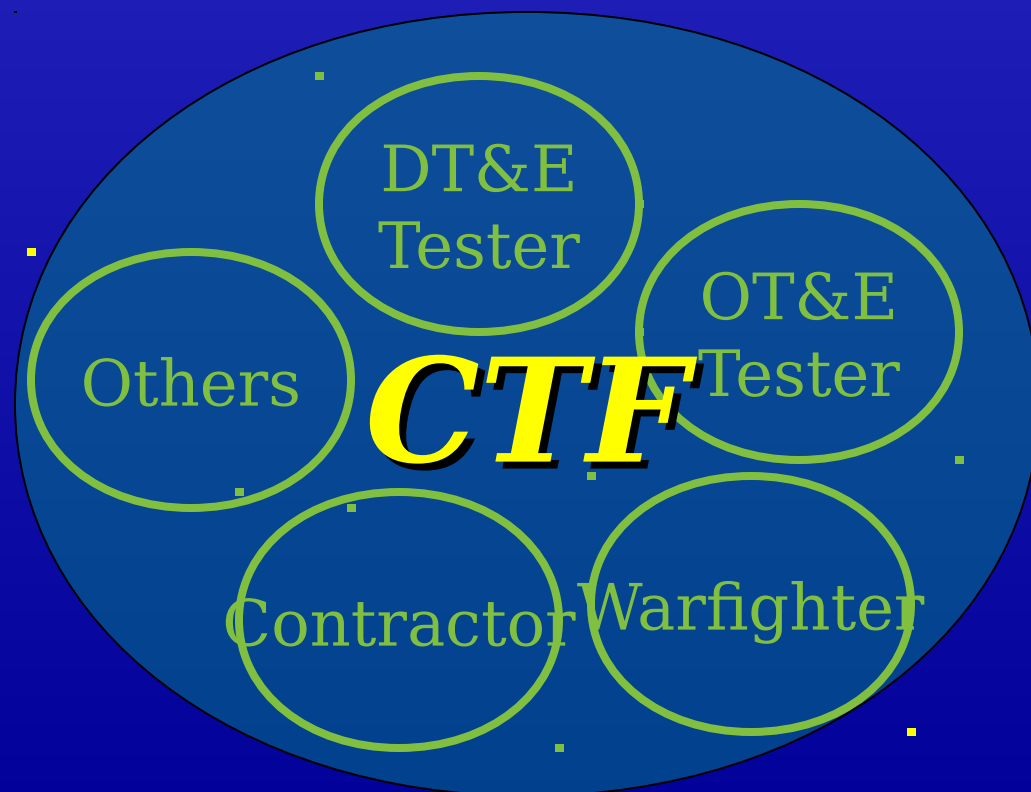




# Effective in Evolutionary or Grand Development



TBMCS  
AFMSS  
R/SAOC  
DCAPES  
IBS  
EFX



# Spiral Acquisition

## ***EFX***

**feedback:**

*“Demonstrated ability to evolve DT&E processes into more flexible approaches better suited for the embryonic demands of Spiral Development”*

*“Execution had the clear mark of the 46TS, adding a powerful, experienced force”*





# So Why Choose the 46TS?



- **Products**

- Test and Evaluation Master
- Test plans and procedures
- Formal and informal reports
- Assessments and evaluations

INTERNAL DRAFT -- NOT FOR DISTRIBUTION

*Review*  
*OB*

**EFX Network Performance  
Assessment (Spiral 2)**

**Letter Report**

Prepared by \_\_\_\_\_

Flight \_\_\_\_\_

pay, Inc. \_\_\_\_\_

**EFX-98  
Verification Report  
For  
Spiral Release 2.0**

**11 August, 1998**

**Prepared for:**  
EFX-98 SPO Building 1521  
Hanscom AFB

**Prepared by:**  
CCPI, Organization  
Hanscom AFB

**Reviewed by:** \_\_\_\_\_ **Approved by:** \_\_\_\_\_

JAMES H. BAKER, Captain, USAF  
Flight Commander, C2 Systems Test Flight  
46<sup>th</sup> Test Squadron  
Date: \_\_\_\_\_

GREGORY JABLONOVSKY, Captain, USAF  
EFX SPO  
Date: \_\_\_\_\_





# Products - ESC Y2K Eval



- ESC wide systems tested in the CUBE
- 46TS leading the evaluation team
- Result: Ops-level evaluation of Y2K capabilities at warfighter level





# Misconceptions

- **SPO or contractor can be RTO**

Government RTO is mandatory, and SPO RTO requires a waiver

- **Testers slow to adapt**

We've embraced spiral development, and fee for service makes us lean and mean

- **We'll get in your way**

We bring the CTF in early to get you through the first time



# Conclusion

- Detachment 1 Iron is here to bring evolutionary SC
- Professional SPOs for military qualifications
- Rapid C2 capability fighter is our goal



Effective testing saves time & money while ensuring performance!